

**SAFETY DATA SHEET**

**100% F2Xe**

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
1/12

**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

**1.1 Product identifier**

**Product name:** 100% F2Xe

**Additional identification**

**Chemical name:** Xenon difluoride  
**Chemical formula:** F2Xe  
**INDEX No.** -  
**CAS-No.** 13709-36-9  
**EC No.** 237-251-2  
**REACH Registration No.** Not available

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

**Identified uses:** Industrial and professional. Perform risk assessment prior to use. Electronic industry  
**Uses advised against** Consumer use.

**1.3 Details of the supplier of the safety data sheet**

**Supplier**

BOC  
Priestley Road, Worsley  
M28 2UT Manchester

**Telephone:** 0800 111 333

**E-Mail:** ReachSDS@boc.com

**1.4 Emergency telephone number:** 0800 111 333

**SECTION 2: Hazards identification**

**2.1 Classification of the substance or mixture**

**Classification according to Directive 67/548/EEC or 1999/45/EC as amended**

O; R8 T; R25 T+; R26 C; R34

The full text for all R-phrases is displayed in section 16.

**Classification according to Regulation (EC) No 1272/2008 as amended**

**Physical hazards**

Oxidising solids Category 2 H272: May intensify fire; oxidiser.

**Health hazards**

Acute toxicity ( Oral) Category 3 H301: Toxic if swallowed.  
Acute toxicity ( Inhalation - dust and mist) Category 2 H330: Fatal if inhaled.  
Skin corrosion Category 1B H314: Causes severe skin burns and eye damage.

**SAFETY DATA SHEET**

**100% F2Xe**

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
2/12

**2.2 Label elements**

**Contains:** Xenon difluoride



**Signal words:** Danger

**Hazard Statement(s):**  
H272: May intensify fire; oxidiser.  
H301: Toxic if swallowed.  
H314: Causes severe skin burns and eye damage.  
H330: Fatal if inhaled.

**Precautionary statement**

**Prevention:**  
P220: Keep/Store away from combustible materials.  
P260: Do not breathe dust/fume/gas/mist/vapours/spray.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.  
P284: Wear respiratory protection.

**Response:**  
P301+P310: IF SWALLOWED: Immediately call a POISON CENTRE or doctor.  
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**Storage:**  
P403+P233: Store in a well-ventilated place. Keep container tightly closed.

**Disposal:**  
None.

**2.3 Other hazards:** None.

**SECTION 3: Composition/information on ingredients**

**3.1 Substances**

**Chemical name:** Xenon difluoride  
**INDEX No.:** -  
**CAS-No.:** 13709-36-9  
**EC No.:** 237-251-2  
**REACH Registration No.:** Not available  
**Purity:** 100 %  
The purity of the substance in this section is used for classification only, and does not represent the actual purity of the substance as supplied, for which other documentation should be consulted.

**Trade name:** -

**SAFETY DATA SHEET**

**100% F2Xe**

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
3/12

**SECTION 4: First Aid Measures**

**General:** Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

**4.1 Description of first aid measures**

**Inhalation:** Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

**Eye contact:** Make sure to remove any contact lenses from the eyes before rinsing. Flush thoroughly with water for at least 15 minutes. Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes.

**Skin contact:** Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash skin thoroughly with soap and water.

**Ingestion:** DO NOT induce vomiting. Get medical attention immediately. Rinse nose, mouth and throat with water.

**4.2 Most important symptoms and effects, both acute and delayed:** Fatal if inhaled. Toxic if swallowed. Causes severe skin burns and eye damage.

**4.3 Indication of any immediate medical attention and special treatment needed**

**Hazards:** Fatal if inhaled. Toxic if swallowed. Causes severe skin burns and eye damage.

**Treatment:** If calcium gluconate gel is available, rub it into affected skin.

**SECTION 5: Firefighting Measures**

**General fire hazards:** Material will not burn.

**5.1 Extinguishing media**

**Suitable extinguishing media:** Water.

**Unsuitable extinguishing media:** Dry Chemical, CO2, Halon

**5.2 Special hazards arising from the substance or mixture:** May ignite other combustible materials. Strong oxidiser. Enhances combustion of organic matter and other combustible materials.

**Hazardous Combustion Products:** If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition: Xenon; fluorine

## SAFETY DATA SHEET

### 100% F2Xe

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
4/12

#### 5.3 Advice for firefighters

##### Special fire fighting procedures:

Cool containers exposed to heat with water spray and remove container, if no risk is involved. Continue water spray from protected position until container stays cool.

##### Special protective equipment for firefighters:

Gas tight chemically protective clothing (Type 1) in combination with self contained breathing apparatus.  
Guideline: EN 943-2 Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Performance requirements for gas-tight (Type 1) chemical protective suits for emergency teams (ET)

#### SECTION 6: Accidental Release Measures

##### 6.1 Personal precautions, protective equipment and emergency procedures:

Evacuate area. Eliminate all ignition sources if safe to do so. Provide adequate ventilation. Monitor the concentration of the released product. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. EN 137 Respiratory protective devices — Self-contained open-circuit compressed air breathing apparatus with full face mask — Requirements, testing, marking. Avoid breathing dust.

##### 6.2 Environmental precautions:

Prevent further leakage or spillage if safe to do so. Avoid release to the environment. Keep run-off water out of sewers and water sources. Dyke for water control.

##### 6.3 Methods and material for containment and cleaning up:

Provide adequate ventilation.  
Seal leaking cylinder in plastic bag and store in outer drum. Use alkaline chemical absorbent as prevention in outer drum.  
Spills: Move containers away from spill to a safe area. Hydrolyse with water and neutralise with alkaline solution.  
Consult supplier for specific recommendations.

##### 6.4 Reference to other sections:

Refer to sections 8 and 13.

#### SECTION 7: Handling and Storage:

##### 7.1 Precautions for safe handling:

Only experienced and properly instructed persons should handle the product. Avoid exposure - obtain special instructions before use. Handle in a fume cupboard. Handle in gloves box or glove bag. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Keep equipment free from oil and grease. Use only oxygen approved lubricants and sealants. Refer to supplier's handling instructions. The substance must be handled in accordance with good industrial hygiene and safety procedures. Protect containers from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the container contents. Provide adequate ventilation. Keep container below 50°C in a well ventilated place. Observe all regulations and local requirements regarding storage of containers. When using do not eat, drink or smoke. Store in accordance with local/regional/national/international regulations

**SAFETY DATA SHEET**

**100% F2Xe**

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
5/12

**7.2 Conditions for safe storage, including any incompatibilities:** Containers should not be stored in conditions likely to encourage corrosion. Keep away from food, drink and animal feeding stuffs. Stored containers should be periodically checked for general conditions and leakage. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible material. Segregate from flammable gases and other flammable materials being stored. Do not expose to air. Do not store product in glass containers.

**7.3 Specific end use(s):** None.

**SECTION 8: Exposure Controls/Personal Protection**

**8.1 Control parameters**

**Occupational Exposure Limits**

Chemical name	Type	Exposure Limit Values	Source
Xenon difluoride - as F	TWA	2,5 mg/m <sup>3</sup>	UK. EH40 Workplace Exposure Limits (WELs) ( 12 2011)
Xenon difluoride	TWA	2,5 mg/m <sup>3</sup>	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU ( 12 2009)

**8.2 Exposure controls**

**Appropriate engineering controls:**

Consider a work permit system e.g. for maintenance activities. Ensure adequate air ventilation. Provide adequate general and local exhaust ventilation. Keep concentrations well below occupational exposure limits. Gas detectors should be used when toxic quantities may be released. Product to be handled in a closed system and under strictly controlled conditions. Do not eat, drink or smoke when using the product.

**Individual protection measures, such as personal protective equipment**

**General information:**

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Keep self contained breathing apparatus readily available for emergency use. Keep suitable chemically resistant protective clothing readily available for emergency use. Personal protective equipment for the body should be selected based on the task being performed and the risks involved. Protect eyes, face and skin from contact with product. Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste product treatment.

**Eye/face protection:**

Wear safety glasses with side shields (or goggles) and a face shield. Guideline: EN 166 Personal Eye Protection.

**SAFETY DATA SHEET**

**100% F2Xe**

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
6/12

**Skin protection**

**Hand protection:**

Wear working gloves while handling containers  
Guideline: EN 388 Protective gloves against mechanical risks  
Chemically resistant gloves complying with EN 374 should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.  
Guideline: EN 374-1/2/3 Protective gloves against chemicals and micro-organisms.

**Body protection:**

Full protective clothing should be worn when handling this product.

**Other:**

Wear safety shoes while handling containers  
Guideline: ISO 20345 Personal protective equipment - Safety footwear.

**Respiratory Protection:**

Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances. The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD.

**Thermal hazards:**

No precautionary measures are necessary.

**Hygiene measures:**

Obtain special instructions before use. Specific risk management measures are not required beyond good industrial hygiene and safety procedures. Do not eat, drink or smoke when using the product.

**Environmental exposure controls:**

For waste disposal, see section 13.

**SECTION 9: Physical And Chemical Properties**

**9.1 Information on basic physical and chemical properties**

**Appearance**

<b>Physical state:</b>	Solid
<b>Form:</b>	Solid
<b>Colour:</b>	White
<b>Odour:</b>	Pungent.
<b>Odour Threshold:</b>	Odour threshold is subjective and is inadequate to warn of over exposure.
<b>pH:</b>	Not applicable.
<b>Melting Point:</b>	129 °C
<b>Boiling Point:</b>	114 °C
<b>Sublimation Point:</b>	Not applicable.
<b>Critical Temp. (°C):</b>	No data available.
<b>Flash Point:</b>	Not applicable
<b>Evaporation Rate:</b>	Not applicable
<b>Flammability (solid, gas):</b>	This product is not flammable.
<b>Flammability limit - upper (%)-:</b>	Not applicable.

## SAFETY DATA SHEET

### 100% F2Xe

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
7/12

<b>Flammability limit - lower(%)-:</b>	Not applicable.
<b>Vapour pressure:</b>	0,5 kPa ( 25 °C )
<b>Vapour density (air=1):</b>	No data available.
<b>Relative density:</b>	4,32 ( 25 °C )
<b>Solubility(ies)</b>	
<b>Solubility in Water:</b>	25 g/l ( 0 °C )
<b>Partition coefficient (n-octanol/water):</b>	Not applicable.
<b>Autoignition Temperature:</b>	Not applicable.
<b>Decomposition Temperature:</b>	Not applicable.
<b>Viscosity</b>	
<b>Kinematic viscosity:</b>	No data available.
<b>Dynamic Viscosity:</b>	No data available.
<b>Explosive properties:</b>	Not applicable.
<b>Oxidising Properties:</b>	Oxidising.

**9.2 Other information:** None.

**Molecular weight:** 169,29 g/mol ( F2Xe)

## SECTION 10: Stability and Reactivity

<b>10.1 Reactivity:</b>	No reactivity hazard other than the effects described in sub-section below. Dissolves in water like sugar, resulting in a solution of dilute hydrofluoric acid.
<b>10.2 Chemical stability:</b>	Stable under normal conditions.
<b>10.3 Possibility of hazardous reactions:</b>	Violently oxidises organic material. May react violently with combustible materials. May react violently with reducing agents.
<b>10.4 Conditions to avoid:</b>	Avoid moisture in the installation.
<b>10.5 Incompatible materials:</b>	Moisture. Combustible materials Reducing Agents. Keep equipment free from oil and grease. For material compatibility see latest version of ISO-11114.
<b>10.6 Hazardous decomposition products:</b>	Under normal conditions of storage and use, hazardous decomposition products should not be produced. The product hydrolyses quickly in the presence of water to: Hydrogen fluoride

## SECTION 11: Toxicological Information

**General information:** None.

### 11.1 Information on toxicological effects

**Acute Toxicity - Oral Product**  
LC50 ( Mouse): 90 mg/kg  
Toxic if swallowed.

**SAFETY DATA SHEET**

**100% F2Xe**

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
8/12

<b>Acute Toxicity - Dermal Product</b>	Based on available data, the classification criteria are not met.
<b>Acute Toxicity - Inhalation Product</b>	LC50 ( Mouse, 2 h): 445 mg/m3 Fatal if inhaled.
<b>Skin corrosion/irritation Product</b>	Causes severe burns.
<b>Serious eye damage/eye irritation Product</b>	Causes serious eye damage.
<b>Respiratory or skin sensitisation Product</b>	Based on available data, the classification criteria are not met.
<b>Germ cell mutagenicity Product</b>	Based on available data, the classification criteria are not met.
<b>Carcinogenicity Product</b>	Based on available data, the classification criteria are not met.
<b>Reproductive toxicity Product</b>	Based on available data, the classification criteria are not met.
<b>Specific target organ toxicity - single exposure Product</b>	Based on available data, the classification criteria are not met.
<b>Specific target organ toxicity - repeated exposure Product</b>	Based on available data, the classification criteria are not met.
<b>Aspiration hazard Product</b>	Not applicable

**SECTION 12: Ecological Information**

**12.1 Toxicity**

**Acute toxicity Product** No data available.

**12.2 Persistence and degradability**

**Product** No data available.

**12.3 Bioaccumulative potential**

**Product** No data available.

**12.4 Mobility in soil**

**Product** No data available..



**SAFETY DATA SHEET**

**100% F2Xe**

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
9/12

**12.5 Results of PBT and vPvB  
assessment**

**Product** No data available.

**12.6 Other adverse effects:** No data available.

**SECTION 13: Disposal Considerations**

**13.1 Waste treatment methods**

**General information:** Consult supplier for specific recommendations.

**Disposal methods:** Dispose of container via supplier only. Discharge, treatment, or disposal may be subject to national, state, or local laws.  
Dispose of by dissolving in water/acidic solution & neutralise.  
Dispose of residue according to local chemical disposal site - return to supplier.

**SECTION 14: Transport Information**

**ADR**

14.1 UN number: UN 3087  
14.2 UN proper shipping name: OXIDIZING SOLID, TOXIC, N.O.S. (Xenon difluoride)  
14.3 Transport hazard class(es)  
Class: 5.1  
Label(s): 5.1, 6.1  
Hazard No. (ADR): 56  
Tunnel restriction code: (E)  
Emergency Action Code: 1W  
14.4 Packing group: II  
14.5 Environmental hazards: Not applicable  
14.6 Special precautions for user: -

**RID**

14.1 UN number: UN 3087  
14.2 UN proper shipping name: OXIDIZING SOLID, TOXIC, N.O.S. (Xenon difluoride)  
14.3 Transport hazard class(es)  
Class: 5.1  
Label(s): 5.1, 6.1  
14.4 Packing group: II  
14.5 Environmental hazards: Not applicable  
14.6 Special precautions for user: -

**SAFETY DATA SHEET**

**100% F2Xe**

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
10/12

**IMDG**

14.1 UN number: UN 3087  
14.2 UN proper shipping name: OXIDIZING SOLID, TOXIC, N.O.S. (Xenon difluoride)  
14.3 Transport hazard class(es)  
Class: 5.1  
Label(s): 5.1, 6.1  
EmS No.: F-A, S-Q  
14.3 Packing group: II  
14.5 Environmental hazards: Not applicable  
14.6 Special precautions for user: -

**IATA**

14.1 UN number: UN 3087  
14.2 Proper Shipping Name: Oxidizing solid, toxic, n.o.s. (Xenon difluoride)  
14.3 Transport hazard class(es):  
Class: 5.1  
Label(s): 5.1, 6.1  
14.4 Packing group: II  
14.5 Environmental hazards: Not applicable  
14.6 Special precautions for user: -  
Other information  
Passenger and cargo aircraft: Allowed.  
Cargo aircraft only: Allowed.

**14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable.

**SECTION 15: Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:**

**National Regulations**

Management of Health and Safety at Work Regulations (1999 No. 3242) The Regulatory Reform (Fire Safety) Order 2005 (2005 No. 1541) Control of Substances Hazardous to Health Regulations (COSHH, 2002 No. 2677) Provision and Use of Work Equipment Regulations (PUWER, 1998 No. 2306) Personal Protective Equipment Regulations (1992 No. 2966) Control of Major Accident Hazards Regulations (COMAH, 1999 No. 743) Chemical Hazards Information and Packaging for Supply (CHIP, 1994 No. 3247) Pressure Systems Safety Regulations (PSSR, 2000 No. 128) Only products that comply with the food regulations 95/2/EC and 2008/84/EC and are labelled as such may be used as food additives.  
This Safety Data Sheet has been produced to comply with Regulation (EU) 453/2010.

**15.2 Chemical safety assessment:**

No Chemical Safety Assessment has been carried out.

**SECTION 16: Other Information**

**Revision Information:** Section 14 updated.

## SAFETY DATA SHEET

### 100% F2Xe

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
11/12

#### Key literature references and sources for data:

Various sources of data have been used in the compilation of this SDS, they include but are not exclusive to:

Agency for Toxic Substances and Diseases Registry (ATSDR)  
<http://www.atsdr.cdc.gov/>

European Chemical Agency: Guidance on the Compilation of Safety Data Sheets.  
European Chemical Agency: Information on Registered Substances  
<http://apps.echa.europa.eu/registered/registered-sub.aspx#search>

European Industrial Gases Association (EIGA) Doc. 169 Classification and Labelling guide.

International Programme on Chemical Safety (<http://www.inchem.org/>)

ISO 10156:2010 Gases and gas mixtures - Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets.

Matheson Gas Data Book, 7th Edition.

National Institute for Standards and Technology (NIST) Standard Reference Database Number 69

The ESIS (European chemical Substances Information System) platform of the former European Chemicals Bureau (ECB) ESIS (<http://ecb.jrc.ec.europa.eu/esis/>).

The European Chemical Industry Council (CEFIC) ERICards.

United States of America's National Library of Medicine's toxicology data network TOXNET (<http://toxnet.nlm.nih.gov/index.html>)

Threshold Limit Values (TLV) from the American Conference of Governmental Industrial Hygienists (ACGIH).

Substance specific information from suppliers.

Details given in this document are believed to be correct at the time of publication.

EH40 (as amended) Workplace exposure limits.

#### Wording of the R-phrases and H-statements in sections 2 and 3

H272	May intensify fire; oxidiser.
H301	Toxic if swallowed.
H314	Causes severe skin burns and eye damage.
H330	Fatal if inhaled.
R8	Contact with combustible material may cause fire.
R25	Toxic if swallowed.
R26	Very toxic by inhalation.
R34	Causes burns.

#### Training information:

Users of breathing apparatus must be trained. Ensure operators understand the toxicity hazard.

#### Classification according to Regulation (EC) No 1272/2008 as amended

Ox. Sol. 2, H272  
Acute Tox. 3, H301  
Acute Tox. 2, H330  
Skin Corr. 1B, H314

**SAFETY DATA SHEET****100% F2Xe**

Issue date: 31.10.2013  
Revision date: 19.12.2013

Version: 2.0

SDS No.: 000010022232  
12/12

---

**Other information:**

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Ensure adequate air ventilation. Ensure all national/local regulations are observed. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. Note: When using this document care should be taken, as the decimal sign and its position complies with rules for the structure and drafting of international standards, and is a comma on the line. As an example 2,000 is two (to three decimal places) and not two thousand, whilst 1.000 is one thousand and not one (to three decimal places).

**Issue date:**

31.10.2013

**Disclaimer:**

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.